

IN THE CLAIMS:

Please see attached amended claims 1, 4, 8, 12 and 14.

Please add new claims 16 and 17.

Please cancel claims 5, 6, 7, 10, 11, 13 and 15.

Claims 2, 3, and 9 were previously cancelled.

SAB 10/17  
1. (Previously Amended) A system for downloading firmware from a source module onto a controller of a storage medium with minimal latency of operation comprising:

(a) first source software means providing SCSI firmware for a disk drive and servo SCSI firmware for positioning said disk drive;

(b) second software means for providing a central processing unit having a selection means for choosing hardware simulated single or dual two-dimensional array means for temporary storing said SCSI firmware prior to placement onto a target peripheral controller for said disk drive;

(c) third software means for temporarily storing a different version of said firmware until said target controller has been accessed to identify the proper version of firmware required;

(d) fourth software means for checking the pre-existing firmware in said target controller to determine whether an updated firmware version will be required for a subsequent download.

2. (Cancelled).

1

3. (Cancelled).

4. (Currently Amended) A system for downloading SCSI firmware and SCSI servo firmware in a rapid fashion onto a target control module, said system comprising:

(a) a source software means for said SCSI firmware and SCSI servo firmware; said source software means including:

(a1) control data received from tape, disk, CD-ROM or the World Wide Web;

(b) software simulated central processing means for receiving said firmware from said source software means and utilizing a software emulated local memory means for separate storage areas for said SCSI firmware and for said servo SCSI firmware; wherein said software simulated central processing means includes:

(b1) software means for recognizing the number of bytes of firmware to be downloaded;

(b2) means for selecting a software emulated buffer array size which most closely approximates said recognized number of bytes to be downloaded;

(b3) software inquiry means to said target controller to acquire identification information;

(b4) software means to determine, from said identification information, what version of firmware will be downloaded to said target controller;

(c) connection means from said software simulated local memory means over to a selected one of a plurality of disk drives for temporary storage;

(d) peripheral controller means for loading said SCSI firmware into a first flash PROM and for loading said servo SCSI firmware into a second servo flash PROM;

(e) means to Write said firmware from said first flash and second flash PROMs onto a targeted peripheral controller for a disk unit.

5. (Cancelled).

cf

6. (Cancelled).



7. (Cancelled).

8. (Currently Amended) A system for downloading the appropriate SCSI firmware onto a target module controller and overcoming the normal capacity limitations of temporary buffer storage comprising:

(a) software source means for providing microcode firmware for a target controller;

(b) software emulated processor means having a temporary implemented software first and second two-dimensional buffer array means for receiving and buffering said SCSI firmware and SCSI servo firmware destined for said target controller without adding any additional hardware;

(c) software control means for transferring said SCSI firmware and servo firmware onto a targeted peripheral controller for a disk unit;

(d) a library exported interface (USERMAINTREQUEST) for issuing a download command request and an inquiry command to query the said target controller, said inquiry command including:

(d1) means to check and compare the pre-existing firmware in said target controller to determine whether new updated firmware is required;

(e) software means to access the appropriate firmware release numbers and servo release numbers to enable a selection of the appropriately proper firmware;

(f) software selection means for selecting the appropriate size of said temporary implemented software first and second two-dimensional buffer array means to most efficiently store said selected proper firmware. ;

(g) means for checking to indicate that the proper firmware has been downloaded to the proper target controller module.

9. (Cancelled).

CX

10. (Cancelled).

C

11. (Cancelled).

cf

12. (Currently Amended) A software method of selecting and downloading the appropriate SCSI firmware and servo firmware for a selected target control module comprising the steps of:

(a) providing a plurality of separate software emulated temporary storage media for holding different versions of SCSI firmware appropriate for different types of target control modules;

(b) utilizing a DFAST utility program for initiating a firmware download to a target control module, said DFAST program functioning to download firmware to SCSI devices;

(c) inquiring as to the identity and firmware requirements of a selected target control module; said inquiring including the step of:

(c1) checking the pre-existing firmware in said target controller to determine whether or not said pre-existing firmware requires any updating from the selected firmware on the selected temporary storage media;

(d) fetching, by said DFAST utility program, of the appropriate firmware file from said storage media;

(e) selecting a single or double temporary software two-dimensional buffer array appropriate to the byte count of said appropriately selected firmware for temporary storage;

(f) downloading the selected firmware by said DFAST utility onto said target control module.

13. (Cancelled).

C



14. (Currently Amended) A system utilizing software means for rapid downloading, in one command cycle, of SCSI firmware and servo firmware into a target control module, comprising:

(a) first software means for initiating a SCSI Inquiry Command to said target control module via a Command Descriptor Block;

(b) second software means to query a designated target control module with information from a Page Code Field;

(c) third software means for enabling access to and acquiring a firmware page number and a firmware version number for said target control module;

(d) downloading said SCSI firmware data using selected sizes of software implemented first and second two-dimensional buffer arrays;

(e) passing said SCSI firmware data onto said target control module;

(f) sensing when said SCSI Inquiry Command initiates an illegal request.

15. (Cancelled).

cf

16. (New) A specialized download operation method to download firmware to a SCSI Target via a peripheral controller comprising the steps of:

- (a) downloading firmware to a designated SCSI disk drive device;
- (b) entering the name of the firmware file involved to enable said firmware file to be accessed from memory;
- (c) fetching said firmware file;
- (d) deciding whether (YES) or not (NO) to download said firmware file to said peripheral controller; and if YES;
- (e) entering the controller ID to select the appropriate controller;
- (f) assigning the selected controller for firmware reception;
- (g) determining that said selected controller has been assigned for utilization, and if YES;
- (h) reading out the attributes of said selected controller
- (i) comparing the firmware header file with the SCSI target attributes to see if the header file matches the target attribute, if YES;
- (j) determining if the firmware is still to be downloaded, and if YES;

(k) setting up the buffer arrays for use in the download;

(l) utilizing the download using the one-dimensional buffer array;

(m) issuing a Write Buffer command indicating the total bytes of data involved;

(n) issuing a Test Unit Ready Command;

(o) reading attributes and displaying attributes of the data involved;

(p) issuing an inquiry command;

(q) displaying the inquiry data for servo firmware to control tracking of the disk drive of the selected peripheral controller;

(r) downloading firmware to a selected controller.

17. (New) The method of claim 16 wherein step (d) is NO which then includes the steps of:

(dn1) deciding whether to load said firmware to the target device, if YES then;

(dn2) entering said device ID;

(dn3) assigning the selected target device;

(dn4) reading said selected device attributes;

(dn5) comparing the header file with said target attributes for a match, if YES, then;

(dn6) setting up appropriate buffer arrays for a download;

(dn7) inquiring about disk servo data to compare servo header firmware with target servo data for a match; if YES, then;

(dn8) downloading firmware to said buffer arrays;

(dn9) checking if firmware is greater than 393,216 bytes; and if YES, then;

(dn10) utilizing said first buffer array of said two-dimensional array;

(dn11) issuing a sequence of Write Buffer commands to handle 8192 bytes of data for each command;

(dn12) utilizing said second two-dimensional buffer array for downloading 8192 bytes for each Write Buffer Command;

(dn13) verifying that all of the bytes have been downloaded;

(dn14) checking to see that the buffer array download has been completed;

(dn15) reading a Test Unit Command to recognize when a selected module is ready to receive data;

(dn16) reading the attributes of said Test Unit;

(dn17) issuing an Inquiry Command to said target disk servo device;

(dn18) downloading said firmware to said target disk servo device.